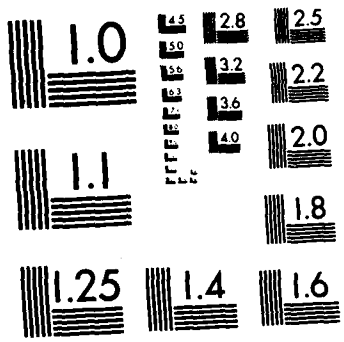
AD-A134 967 VALUE ENGINEERING SHOULD BE IMPROVED AS PART OF THE DEFENSE DEPARTMENT'S..(U) GENERAL ACCOUNTING OFFICE WASHINGTON DC ACCOUNTING AND FINANC.. 27 SEP 83 1/1

UNCLASSIFIED GAO/AFMD-83-78 F/G 14/1 NL



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

(2)

REPORT BY THE U.S.

General Accounting Office

AD-A134967

Value Engineering Should Be Improved As Part Of The Defense Department's Approach To Reducing Acquisition Cost

Value engineering, a technique for reducing cost and improving productivity, has been used by Defense for 20 years. Recently, the Department has stressed this technique to reduce weapon systems acquisition costs under defense contracts. Although increased savings have been reported, Defense was still more than $300 million short of its fiscal 1982 savings goal. Navy lagged behind the other services.

GAO believes that value engineering should be integrated into Defense's overall approach to reducing costs and improving productivity. GAO also believes that value engineering savings will increase if Defense (1) provides high level support and visibility, (2) recognizes value engineering achievements, (3) increases contractor awareness, and (4) better manages the Navy program. DOD agreed with GAO's conclusions and said it would improve its value engineering program.

GAO/AFMD-83-78
SEPTEMBER 27, 1983

UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

ACCOUNTING AND FINANCIAL MANAGEMENT DIVISION

B-212912

The Honorable Larry Winn, Jr.
House of Representatives

Dear Mr. Winn:

In your March 3, 1982, letter you asked us to provide an update of our 1977 report on the Defense Department's value engineering program, (PSAD-78-5, Nov. 16, 1977). Because of later discussions with you and your staff, we directed our focus toward the contractor component of that program.

This report describes the current status of the program and recommends improvements in four major areas. It also suggests that the Department of Defense emphasize value engineering in its overall approach to improving productivity and reducing acquisition cost. In commenting on our draft report, Defense indicated it will strengthen the contractor component of its value engineering program.

Copies of this report are being sent to the Senate and House Committees on Appropriations, the Senate Committee on Governmental Affairs, the House Committee on Government Operations, the Secretary of Defense, and the Secretaries of the Air Force, Army, and Navy.

Sincerely yours,

W. D. Campbell

W. D. Campbell
Acting Director

REPORT BY THE U.S. GENERAL ACCOUNTING OFFICE

VALUE ENGINEERING SHOULD BE IMPROVED AS PART OF THE DEFENSE DEPARTMENT'S APPROACH TO REDUCING ACQUISITION COST

D I G E S T

The Department of Defense has recently increased management attention to value engineering, which is a recognized technique for reducing cost and improving productivity. In fiscal year 1982, through defense contractor activity under the value engineering program, the Department of Defense reported savings of almost $145 million--nearly $50 million more than in 1981. Despite this increase, Defense was still more than $300 million short of its own fiscal year 1982 savings goal. Most major weapon systems did not report any value engineering savings. To achieve greater savings, Defense must take action in four management areas. Moreover, value engineering--as a unique discipline--should be integrated into an overall Defense program to improve contractor productivity and reduce acquisition costs.

VALUE ENGINEERING IS WIDELY USED AND GAO HAS SUPPORTED IT

In both the private sector and the Federal Government, value engineering has long been recognized as a useful technique for greatly reducing costs and improving productivity. Value engineering studies examine how costs can be reducea when a product is redesigned by using different materials, applying new technology or a more efficient production process, or by eliminating an unnecessary part of the product.

Several major American companies have value engineering programs and report significant cost reductions as a result. Value engineering has also been used by companies in several foreign countries, including Japan and West Germany. Over the past decade, GAO has issued several reports describing the potential benefits of value engineering to the Government--especially within the defense area--and suggesting that the program deserves top management attention. (See pp. 1 to 3.)

Done at the request of Congressman Larry Winn, Jr., this review follows up on earlier GAO reports (see

GAO/AFMD-83-78
SEPTEMBER 27, 1983

p. 3) to determine how the Department of Defense has improved the contractor component of its value engineering program.

DEFENSE CONTRACTOR PROGRAM HAS RECENTLY IMPROVED EXCEPT IN NAVY

The Department of Defense over the last 3 years has acted to strengthen the value engineering program, with particular attention paid to the contractor component. In 1980, for example, Defense issued a new contracting policy and established an annual Department-wide savings goal for the contractor component of the value engineering program. More recently, high level Defense officials have stated that the contractor component needs improvement. In response to these statements, the Army and the Air Force have improved their program guidance, increased value engineering training, sponsored conferences for contractors, and pursued other alternatives for encouraging contractor involvement. Despite the top level expression of concern, no system exists within Defense to ensure that value engineering activity is sufficiently monitored at a high level. (See pp. 5 to 8.)

The Navy is the only military service that has taken little or no management action to improve the contractor component of the value engineering program. The Navy has not established value engineering savings goals at the command or field activity level, issued sufficient program guidance, or provided sufficient training. Because of these and other management weaknesses, the Navy has achieved the lowest level of results both in reported savings and in the number of major weapon systems with active value engineering programs. (See pp. 8-9.)

RESULTS ACHIEVED BUT SAVINGS GOALS NOT MET

All three military services reported greater savings in fiscal year 1982 than in previous years under the defense contractor component of the value engineering program, with the Air Force achieving the largest gains. Individual value engineering change proposals that contributed to these savings can be documented in all three services. (See pp. 9 to 13.)

While Defense increased its reported savings in fiscal year 1982, it was $304 million below its goal of $449 million for the contractor program. In fiscal year 1980, Defense established an annual

goal for value engineering change proposal savings: seven-tenths of one percent of each service's total procurement obligational authority. Defense has never achieved this goal. Furthermore, at the time of GAO's review, 28 of 46 major weapon systems lacked active value engineering programs. (See pp. 14 to 16.)

HOW CAN GREATER SAVINGS BE ACHIEVED?

To achieve its own goal for savings under the contractor component of the value engineering program and to generate savings in a larger number of major weapon system acquisitions, Defense must take management action in four key areas:

- Top level visibility and support. The contractor component of the value engineering program is not systematically monitored at a sufficiently high level to ensure continuous top level visibility and support. (See pp. 17-18.)

- Incentives for Defense personnel. Perhaps because top level support is lacking, Defense personnel are not sufficiently motivated first to encourage contractors to submit value engineering change proposals, and then to process them fairly and expeditiously. (See pp. 18-19.)

- Contractor awareness and confidence. Some contractors and subcontractors do not understand the value engineering program, or they do not believe that the change proposals they submit will receive fair and expeditious treatment. (See pp. 19-20.)

- Weaknesses in the Navy program. The Navy's poor performance under the contractor component of the value engineering program is directly linked to Navy's lack of management emphasis. An action plan is needed to improve Navy's performance. (See p. 21.)

VALUE ENGINEERING SHOULD BE PART OF OVERALL APPROACH

Over the years, GAO has supported a strong value engineering program as one important technique for productivity improvement and cost reduction in the Department of Defense and at defense contractors. While GAO continues to strongly support value engineering, it recognizes it as only one of many useful techniques for improving productivity and reducing costs at defense contractors. There should be a continuing interest not only in the effectiveness of individual techniques and programs, such as

value engineering, but also in whether the various techniques and programs collectively form an effective, comprehensive approach to improving productivity and cutting costs. Value engineering should be neither undersold nor oversold, but--as a unique approach--should be integrated into an overall Defense program of productivity improvement and cost reduction. (See pp. 26 to 28.)

CONCLUSIONS

In today's environment of continuing debate and dialog over the magnitude of the defense budget and the search for ways to reduce it, value engineering should be a technique that is emphasized as part of an overall approach to improving productivity and reducing costs of defense contractors. Over $300 million more could have been saved in fiscal year 1982 if the Department of Defense had achieved its own goal. Because the Defense goal is considered too conservative by some value engineering experts, the annual savings opportunity may be even greater. Clearly, that magnitude of cost savings is worth pursuing through an improved value engineering program. (See pp. 22-23.)

RECOMMENDATIONS

GAO recommends that the Secretary of Defense take management action on the contractor component of the value engineering program by:

--Increasing high level visibility and support for the program at the Department of Defense level and within the military services by (1) integrating value engineering information into appropriate management information systems and (2) ensuring that value engineering achievements by Defense personnel are appropriately recognized.

--Encouraging greater defense contractor and subcontractor participation by ensuring their awareness of, and confidence in, the Department of Defense value engineering program through increased use of correspondence, conferences, and training opportunities.

--Requiring the Secretary of the Navy to develop an action plan to improve the contractor component of the Navy value engineering program. The plan should, as a minimum, address the need for establishing savings goals, improving program guidance, providing more value engineering training, assigning additional full-time value engineering personnel, and taking other actions as necessary

to improve the receptivity of Navy personnel to value engineering change proposals submitted by defense contractors.

In addition, to improve the credibility of reported savings without adding an administrative burden, GAO recommends that the Secretary of Defense have the existing reporting system revised to require that savings be reported at the time actual contract price reductions are made, rather than on the basis of estimates made when value engineering change proposals are approved. (See p. 23.)

AGENCY COMMENTS

The Department of Defense concurred in the findings, conclusions, and two of GAO's four recommendations, and said corrective action would be initiated. For example, the Navy has begun to take positive actions to correct the deficiencies GAO found. Defense partially concurred in the other two recommendations, but offered alternatives for implementation that differed from GAO's suggested approaches. GAO believes the proposed alternatives can be effective if fully implemented. (See app. III.)

Contents

ABBREVIATIONS

DOD	Department of Defense
DSARC	Defense System Acquisition Review Council
GAO	General Accounting Office
VECP	value engineering change proposal

CHAPTER 1

INTRODUCTION

WHAT IS VALUE ENGINEERING?

Value engineering is the scientific method of analyzing and redesigning a product or service so that its function can be achieved at the lowest possible overall cost. The product or service may be redesigned by using different materials, by applying new technology or a more efficient production or delivery process, or by eliminating unnecessary components. A tenet of value engineering is that, while anything less than essential functional capability is unacceptable, anything more is wasteful and should be eliminated.

Value engineering can be applied during any phase of a project from inception to completion. However, in many cases it is applied to a product or service design that has been firmly established. Thus value engineering may be viewed as the "auditing arm" of engineering.

VALUE ENGINEERING IS A RECOGNIZED TOOL FOR REDUCING COST AND INCREASING PRODUCTIVITY

In both the private sector and the Federal Government, value engineering is recognized as a useful tool for reducing cost and improving productivity. The value engineering methodology is largely a by-product of material shortages during World War II. These shortages led to the creation of innovative material and design alternatives and it was often found that the alternatives functioned as well or better, and cost less. From this beginning, an analytical discipline evolved in private industry. The discipline was structured to challenge the proposed way of doing things and systematically search for less costly alternatives. Although commonly known as value engineering, it is sometimes termed value analysis, value control, value improvement, or value management.

Value engineering is used today by many private American companies both in commercial business and defense contracting. The technique has also been used extensively by companies in several foreign countries, including Japan, West Germany, and India. Companies often practice value engineering on their own initiative to increase their profit. The most common objective is to reduce manufacturing costs. Large companies sometimes require their suppliers or subcontractors to engage in value engineering with the objective of either reducing their acquisition costs or increasing the useful function of the items and services they procure. And since 1954, at least 14 Federal agencies, including the U.S. Army Corps of Engineers, the Environmental Protection Agency, the General Services Administration, and the Department of Defense (DOD), have used this cost reduction tool.

HOW DOES DEFENSE'S VALUE ENGINEERING PROGRAM WORK?

The Department of Defense established its value engineering program in 1963. In the 20 years since then, the program has received varying levels of management attention and support.

The Department's program consists of two distinct components: an in-house effort and a contractor effort. The in-house effort is directed toward improving internal DOD operations through value engineering studies. The studies are conducted and the results implemented by Defense personnel. The contractor component was developed to stimulate contractors to submit value engineering change proposals (VECPs) to contract specifications they feel impose costly, nonessential requirements. The incentive to the cor tractor is a share of any savings that result.

The contractor component of the program is implemented by ir cluding value engineering clauses in acquisition contracts. The clauses are of two types: The incentive clause encourages the cc tractor to voluntarily develop and submit value engineering change proposals. The program requirement clause requires the contractor to conduct a sustained value engineering effort at a prescribed level of funding. Under the latter arrangement, the contractor's sharing rate is considerably lower.

Value engineering clauses are unique in that they provide the only incentive specifically designed for cost reduction contract changes. All other incentives are designed to apply only within the scope of work of the contract.

DOD and the three military services share responsibility for the value engineering program and together have issued formal policies and regulations to implement it. In addition, the Defense Acquisition Regulation gives special guidance for implementing contractual aspects of the program. Finally, DOD and the services issue various guidebooks and publications to direct and encourage value engineering activities.

The Under Secretary of Defense for Research and Engineering provides overall policy guidance and annually reviews the performance of the services. The services are responsible for

--establishing service headquarters value engineering focal points,

--developing program plans,

--funding the training of personnel to develop and test value engineering proposals,

--evaluating value engineering change proposals, and

--ensuring management support for approved change proposals.

Value engineering contractor savings are reported semiannually and annually. The focal point in each of the service headquarters requests savings data from the major commands. The commands then ask individual program managers to report savings from value engineering change proposals. In fiscal year 1982 DOD reported $144.7 million in estimated VECP savings.

WE HAVE A LONGSTANDING INTEREST IN VALUE ENGINEERING

We have a longstanding interest in the value engineering technique in both its defense and civilian applications and have issued numerous reports and studies on the subject. (See app. I.) We find that value engineering, when used appropriately, is an effective management tool for identifying and eliminating unnecessary costs in Government acquisitions.

We also recognize that value engineering is only one of many useful techniques and approaches DOD uses. We have a continuing interest in the effectiveness of the various techniques and how they fit into a comprehensive program for contractor productivity improvement and acquisition cost reduction. Value engineering should be neither undersold nor oversold, but--as a unique approach--should be integrated into an overall program. (See app. II.)

OBJECTIVES, SCOPE, AND METHODOLOGY

This report responds to a March 3, 1982, request of Congressman Larry Winn, Jr. The Congressman expressed concern that the DOD value engineering program was not receiving the management attention it needed to achieve its full savings potential. He asked that we follow up on our November 16, 1977, report[1] and address the following questions:

--What has DOD done to encourage the program manager of each major system acquisition to aggressively implement the value engineering program by actively soliciting value engineering change proposals from the contractor and reacting to them promptly?

--To what extent have value engineering goals been set for each major system acquisition?

--To what extent have the services and defense agencies implemented the incentive and program requirement clauses to recognize and reward program managers who perform effectively in administering the value engineering program?

---

[1]"Department of Defense Value Engineering Program Needs Top Management Support" (PSAD-78-5, Nov. 16, 1977).

Our principal objective was to address these questions by evaluating Defense actions since 1978 to improve the contractor component of the value engineering program and achieve larger VECP savings. We focused on potential opportunities to increase management support and institute personnel incentives designed to achieve larger savings. We also drew upon our past productivity reviews to gain perspective on value engineering's relationship to other DOD cost reduction and productivity improvement programs.

While the scope of our review was DOD-wide, we concentrated on the three military services. They make most defense procurements, and the effectiveness of the value engineering program is largely dependent on what they do. Although we did not verify all reported value engineering savings in detail, we did review the DOD reporting process as it applies to the contractor component of the value engineering program.

To assess actions to improve the contractor component of the program, we interviewed DOD, Army, Navy, and Air Force headquarters officials responsible for the value engineering program. We also reviewed regulations, instructions, progress reports, and other documents, focusing on changes in policies, practices, and organization that have occurred since our 1977 report. We then analyzed reported VECP savings since 1977 to document the impact of recent DOD actions to improve the contractor program. This analysis included a breakdown of reported VECP savings by major weapon system.

To identify opportunities for strengthening the contractor component of the program and to further substantiate the effectiveness of the value engineering concept, we analyzed the recommendations of numerous industry associations, conferences, and studies. We also interviewed DOD program managers and contractors responsible for achieving value engineering savings for selected weapon systems. We reviewed value engineering change proposals for 13 weapon systems and verified reported savings for selected proposals under these systems. Selection of weapon systems was based on size of reported savings, production stage of systems being managed, dollar size of system contracts, and amount of activity under value engineering contract clauses.

As a final step, we briefed the Deputy Secretary of Defense and the Undersecretary of the Navy and obtained their comments on our preliminary observations and conclusions. This review was performed in accordance with generally accepted government auditing standards. Field work was completed in May 1983.

CHAPTER 2

MANAGEMENT EMPHASIS ON CONTRACTOR PROGRAM HAS INCREASED SAVINGS SOME BUT NOT ENOUGH

The Department of Defense, the Army, and the Air Force have recently acted to strengthen their value engineering programs, paying particular attention to the contractor component. Management actions have led to revised policies and guidance, an overall VECP savings goal, and more effective correspondence encouraging contractors to participate in the value engineering program. The Air Force program was reorganized and a DOD awards program was introduced. DOD reported total savings for the fiscal year 1982 contractor program of $144.7 million--an increase of about $50 million over fiscal year 1981 but still more than $300 million short of DOD's established goal of $448.7 million. The Navy, which has put less management emphasis on value engineering than the Army and Air Force, has achieved lower savings than those two services.

DOD HAS PUT MORE MANAGEMENT EMPHASIS ON THE CONTRACTOR PROGRAM, BUT NAVY LAGS BEHIND

Defense has taken a series of actions over the last 3 years to improve the value engineering program for contractors. For example, the Deputy Secretary of Defense and the Deputy Under Secretary of Defense for Research and Engineering have stated that the contractor component of the program needs substantial improvement. As a result, policies and procedures for the value engineering program are being updated and revised. In addition, the Defense Council on Integrity and Management Improvement has cited value engineering for its cost reduction potential in conjunction with other Defense productivity efforts. And the Defense Industrial Productivity Office, established in 1982 to improve defense contractor productivity, includes value engineering as part of its overall responsibility.

In 1980 DOD took two important steps to translate high level management concern into a stronger contractor program--a new contractual value engineering policy was issued and an annual DOD-wide VECP savings goal was established. The new contractual policy made value engineering clauses mandatory in all subcontracts of $100,000 or more. It also simplified the method of payment for contractors who submitted successful VECPs. Finally, the value engineering clauses themselves were simplified and standardized to apply to any of DOD's standard contractual arrangements. The annual VECP savings goal was set at seven-tenths of one percent of each service's total procurement obligational authority. That goal remains in effect today.

More recently, DOD has emphasized the value engineering program for contractors by

--instituting a value engineering awards program;

--revitalizing the Value Engineering Committee, which reviews problems and recommends policy changes; and

--reviewing through the Defense Acquisition Regulation Committee several initiatives aimed at improving the contractor component.

DOD initiatives have triggered interest by the Army and Air Force in stimulating contractor involvement in the value engineering program. The Army has improved its contractor program and continues to lead in reported VECP savings. The Air Force has reorganized to revitalize its contractor program and increase savings. Navy management, on the other hand, has not responded as vigorously to DOD's improvement initiatives and continues to take a more pessimistic view of the program's savings potential.

<u>Army, with longstanding support for value engineering, is improving its program</u>

The well-established Army value engineering program, which has benefited from significant management support in the past, recently increased its emphasis on the contractor component of the program.

The Army has an effective structure for managing its total value engineering program and has assigned more full-time staff to the program than the other two services. Program responsibilities are shared between the Comptroller and the major Army commands. The Comptroller is responsible for Army-wide management of the program, which includes formulating Army value engineering policy and establishing both numerical and dollar savings goals. The commands promote the value engineering program for contractors and review VECPs for approval. Four major commands are participating in the program. Program responsibilities for both in-house and contractor value engineering are carried out by 64 full-time staff plus other personnel charged with value engineering as a collateral duty.

Army headquarters and several major commands recently directed that the program be improved and assigned VECP savings goals to subordinate commands and selected weapon system program managers. In response, Army program managers have renewed their efforts to promote the contractor program by encouraging more VECPs from contractors. Training was also increased in fiscal year 1982; 695 Army personnel participated in two major value engineering training courses, an increase of more than 200 from 1981. During the last 3 years, more than 1,800 Army personnel participated in these courses, over twice as many as the Air Force and over 10 times as many as the Navy.

One unique characteristic that appears to strengthen the Army program is the longstanding practice of setting both dollar and numerical VECP goals. The Comptroller annually establishes goals for each command. The major commands, in turn, assign each field activity specific dollar and numerical goals.

Major Army commands have also pursued other alternatives for encouraging contractor involvement and increasing VECP savings. For example, in October 1982 a major Army command jointly sponsored a value engineering conference with the Chicago Defense Contract Administration Service Region. A similar conference was held in Los Angeles in March 1983. The primary purpose was to encourage contractor participation in the DOD value engineering program and to exchange ideas about value engineering projects. At the time of our review, one additional conference was being considered.

In its efforts to encourage contractors, the Army has also successfully tested an experimental value engineering clause. That clause provides a new way to share savings, referred to as the "no-cost" method because it minimizes administrative costs to both parties. In October 1980, after a 2-year trial by an Army subordinate command, DOD authorized the new clause in the Defense Acquisition Regulation.

Air Force emphasizes contractor component in its value engineering program

The Air Force has recently strengthened its value engineering program with particular emphasis on the contractor component. In 1982, the program was reorganized to combine in-house and contractor value engineering under one higher level organization, thereby giving the program greater cohesion and focus. Support for the value engineering program for contractors appears to have increased throughout the Air Force, with the Air Force Systems Command demonstrating the most significant improvement.

In October 1982, Air Force value engineering program responsibilities were consolidated under the Directorate of Contracting and Manufacturing Policy in Air Force headquarters. This directorate now establishes and maintains overall Air Force value engineering policy. The Air Force's Systems Command and Logistics Command carry out this policy by planning and conducting value engineering programs, setting program objectives, establishing focal points, and training personnel. Unlike the Army, the Air Force does not set numerical or dollar savings VECP goals for its subordinate commands and weapon systems program managers. It does, however, establish general objectives to improve its program and to attain the DOD goal of seven-tenths of one percent of its total procurement obligational authority.

Beginning in fiscal year 1981, Air Force management has emphasized the contractor component of the program. The Air Force Vice Chief of Staff, for example, directed the two major commands to increase VECP activity and revitalize the program. As a result, a broad action plan is being implemented, Air Force guidance is being revised, and fiscal year 1983 program plans were approved for these two commands. The action plan contains a wide range of initiatives.

One noteworthy initiative was an April 1982 Air Force-wide value engineering conference at which ten Air Force commands contributed to the development of new Air Force value engineering guidance. The new guidance, not yet final, is intended to

--reorganize the value engineering program to reflect new policies, procedures, and responsibilities;

--expand value engineering training requirements;

--accelerate the VECP evaluation process;

--streamline the reporting system; and

--establish an incentive awards program.

The action plan also encouraged increased value engineering training for Air Force personnel. In fiscal year 1982, 300 Air Force personnel participated in the two major value engineering training courses, up from 232 the year before.

Fiscal year 1983 value engineering program plans for the Air Force's Systems Command and Logistics Command have been approved. Following the revised Air Force guidance, the Air Force Systems Command established a strategy to revitalize its value engineering effort. Essential improvement areas addressed by the strategy are increased management support, program manager involvement, training, and budgeting. The Systems Command has requested additional resources for value engineering, including seven additional full-time personnel, and submitted several proposals for changes in value engineering contractual policy.

<u>Navy has placed less management emphasis on its value engineering program</u>

The Navy has been less responsive to DOD's value engineering improvement initiatives and has emphasized the program less than the other services. In general, the Navy's value engineering program for contractors suffers from a lack of top management support and commitment to improvement. The Navy has done far less than the Army or Air Force. Some Navy officials evidently do not consider value engineering a worthwhile cost management tool.

Under the guidance of the Secretary of the Navy, the Chief of Naval Material plays the key role in managing the Navy's value engineering program for contractors. The Chief of Naval Material is responsible for establishing program objectives, ensuring adequate review of change proposals, evaluating results, reporting savings, and seeing that Navy personnel receive value engineering training.

Navy management, however, has not acted to improve the contractor component of the value engineering program to the same extent that the Army and the Air Force have. The Chief of Naval Material, for example, has issued no program guidance. Furthermore, the official who serves as the technical focal point for the

entire Department reportedly spends less than 10 percent of his time on value engineering.

In contrast to the Army and Air Force, the Navy has not

--assigned a high level official full-time to monitor the overall Navy program,

--developed top level plans to improve its value engineering program,

--at any level, prepared the amount and type of correspondence needed to encourage Navy contractors to submit VECPs,

--held any recent conferences to encourage greater activity in the contractor component of the value engineering program, or

--established numerical goals for VECPs or dollar goals for VECP savings at command or field activity levels.

The lack of strong top management commitment to improve the Navy value engineering program for contractors has apparently led to the view among Navy personnel and Navy contractors that value engineering is not considered a worthwhile program. Several Navy contractors, weapon systems personnel, and Navy officials said informally that some high ranking Navy managers evidently do not support the value engineering program. Also, some Navy weapon system program managers cite other, higher priority duties as reasons for not pursuing value engineering efforts more vigorously.

At the time of our review, the Navy was drafting new value engineering program guidance. However, we concluded that without greater top level Navy support for the value engineering concept a significant improvement was not likely. DOD concurred with our observations on the Navy program. In response to our draft report, DOD said a comprehensive plan was issued, dated June 14, 1983, to improve the Navy program beginning in fiscal year 1984. We believe the plan, if fully implemented, will improve the Navy's program.

CONTRACTOR COMPONENT SAVINGS HAVE INCREASED BUT COULD BE GREATER

In fiscal year 1982, the Department of Defense reported that the contractor component of the value engineering program saved about $145 million--an increase of nearly $50 million over fiscal year 1981. (See chart, p. 11.) Examples of the successful use of value engineering by contractors can be found in each of the three military services. However, despite the results achieved,

--DOD was still more than $300 million short of its own goal for VECP savings in 1982 and

--most major weapon systems did not report VECP savings.

Of the three military services, the Navy has had the poorest record both of reaching the DOD savings goal and of the number of major weapon acquisitions with value engineering savings.

Reported savings have increased: Each military service has had successful VECPs

The savings DOD reported under the contractor component of the value engineering program increased from $96 million in fiscal year 1981 to about $145 million in fiscal year 1982. All three services reported greater savings in 1982, with the Air Force achieving the largest gains. (See chart, p. 12.)

The Army approved 426 VECPs in 1982 compared to 415 in 1981, and reported savings increased from $55 million to almost $62 million during that time. While Army savings as a percentage of total DOD VECP savings decreased in 1982, the Army still reported greater total savings than the other two services.

The Air Force reported $50 million in VECP savings in 1982, up from only about $15 million in 1981. The Air Force Systems Command was especially productive and reported its highest contractor program savings in 10 years. Thirty-eight VECPs were approved by the Systems Command for total reported savings of $46 million.

The Navy reported $31.6 million in VECP savings in 1982, an increase of $7.8 million over 1981. However, the Navy's reported savings in 1982 were much lower than those of the Army or Air Force.

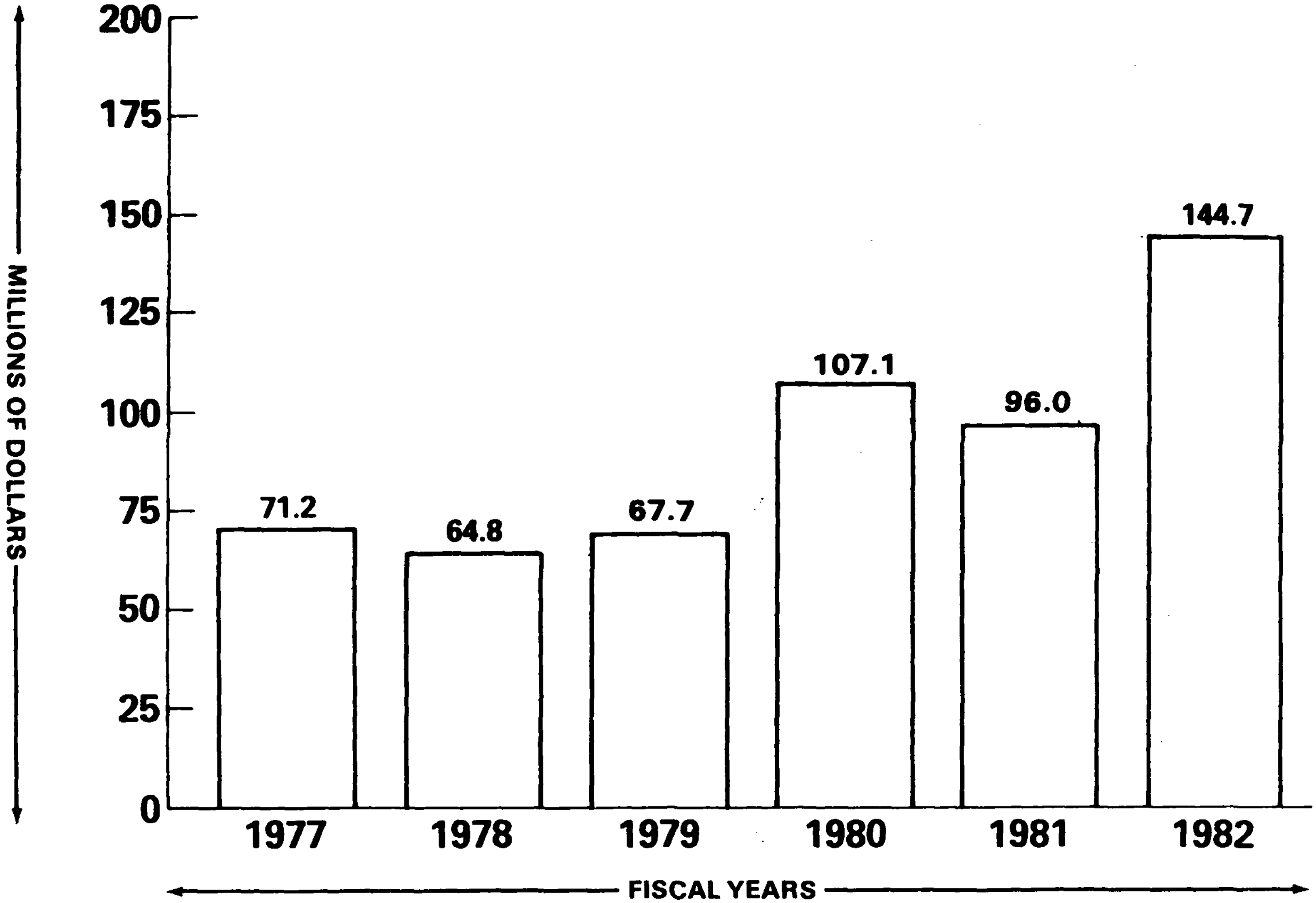
Approved VECPs that have resulted in savings to the Government, or are likely to result in savings, can be identified in each military service. We selected two or more VECPs approved in fiscal years 1981 and 1982 for each of 13 weapon systems in order to (1) understand the nature of the value engineering idea and (2) review the status of contract price reductions to be negotiated pursuant to the value engineering change. In this process, we found successful VECPs in all three services.

Examples of VECPs approved in fiscal year 1982 are discussed below:

- --The Army approved one VECP under its M-1 Tank program to redesign printed wiring assemblies to eliminate unnecessary protective power circuits. The Army reported estimated savings of $1.5 million. In March 1983, the Army was negotiating with the M-1 contractor to decide on an appropriate contract price reduction.

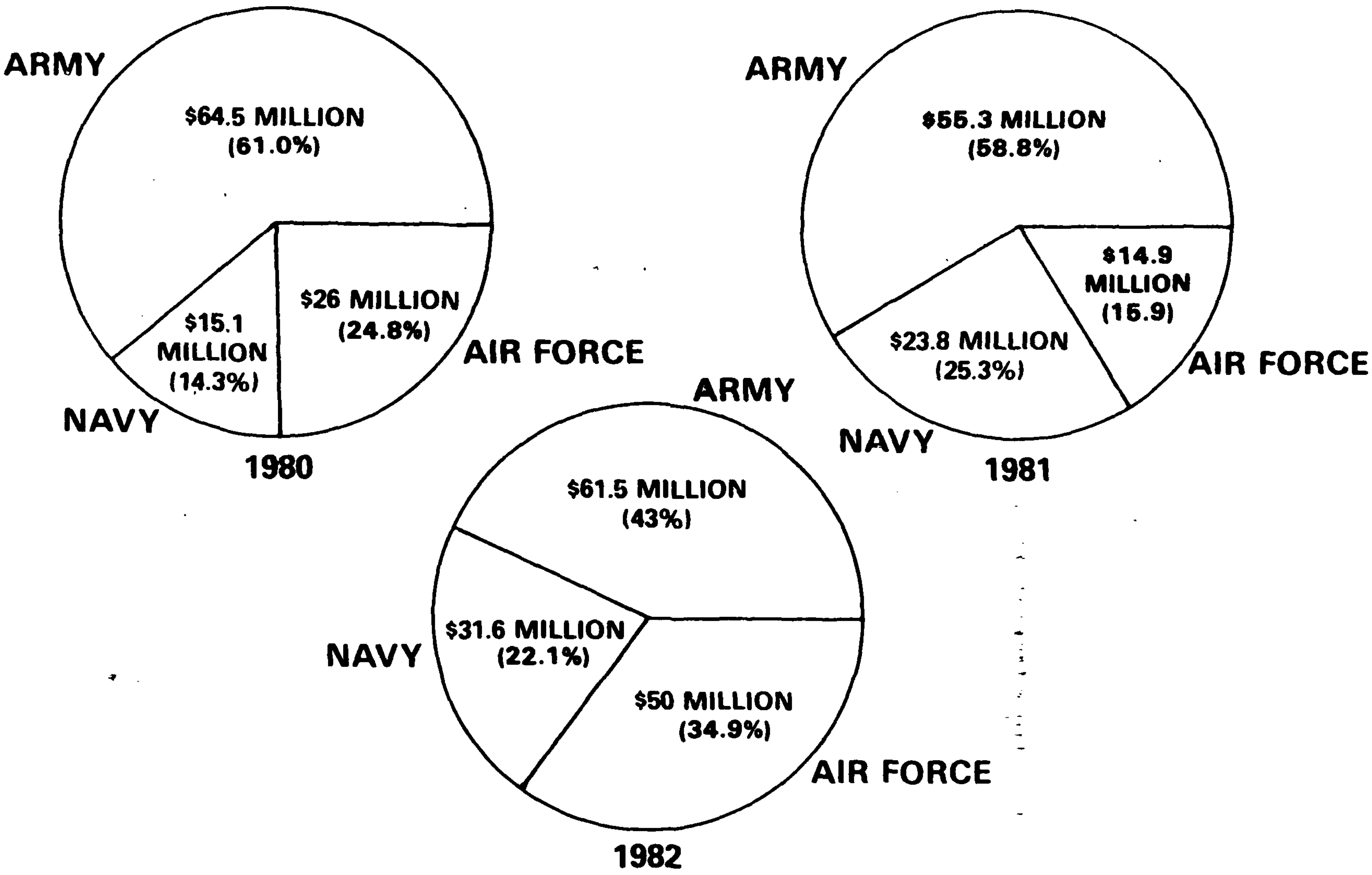
- --The Air Force approved one VECP under its Airborne Warning and Control System (AWACS) program to incorporate new computer chip technology into the radar's circuitry. The Air Force reported estimated savings of $3.5 million. In March 1983, the Air Force was in the process of negotiating cost reductions into three contracts.

VECP SAVINGS REPORTED*



* Includes three military services and Defense Logistics Agency.

VECP SAVINGS BY SERVICE



--The Navy approved one VECP under its MK-46 Torpedo program to eliminate an unnecessary requirement for individual testing of some electrical components. In September 1982, the Navy modified five contracts for a total contract price reduction of $46,000.

While negotiated contract price reductions pursuant to individual VECPs may not necessarily be large, the examples that can be identified in each service demonstrate the merit of VECP activity as an effective cost reduction technique.

What do the reported savings represent?

The VECP savings reported are an estimate of the net savings that will accrue to the Government in the report year and in certain future periods. The savings can occur (1) on the contract under which the VECP was submitted, (2) on other DOD contracts that can benefit from the value engineering idea, and (3) in DOD's internal operations that also benefit from the VECP. While the reported savings relate in part to the future, the amount does not necessarily include all future savings to the Government. For example, DOD may continue to procure the item beyond the period for which savings have been estimated. DOD does not, however, systematically follow through to determine how the estimated reported savings to the Government compare with actual price reductions later negotiated into contracts, or whether the estimated savings in DOD's internal operations actually occur.

Negotiating contract price reductions for VECPs can be a lengthy process. Based on limited spot checks, a few value engineering officials believe that actual reductions negotiated into contracts approximate the estimated savings reported. However, documentation for the spot checks was not readily available. The top DOD value engineering official suggested that the administrative cost of routinely verifying the actual savings in internal DOD operations pursuant to approved VECPs might be prohibitive.

A number of factors subsequent to approval of VECPs could affect how closely total actual savings approximate the reported VECP savings. For example, the number of units to be produced could increase or decrease, causing value-engineering-related savings to be higher or lower. Also, it could be difficult to distinguish the impact of particular VECPs on DOD's internal operations from that of other management or procedural changes that may occur.

Because of the administrative cost and complexity of substantiating actual cost savings as compared to estimated savings reported, we do not advocate that this process be performed routinely for all VECPs. Periodic spot checks by DOD's value engineering officials can indicate the general reliability of reported VECP savings. However, we believe that DOD, in using and disseminating reports of VECP savings, particularly outside of DOD, has a responsibility to clearly define what the reported savings represent.

An alternative approach to reporting VECP savings may be desirable. If savings were not reported until price reductions were negotiated into the contracts, the reported savings figures would be more accurate. Moreover, there would be no need for concern about how actual contract price reductions compare to the earlier estimates made when VECPs were approved.

In commenting on our draft report, DOD suggested alternative ways to ensure the credibility of reported VECP savings. DOD said the Army was experimenting with a procedure to identify the reapplication of VECP savings, and that the Navy had proposed a higher level review of each approved VECP in excess of $20,000. We agree that these alternatives, if carried out effectively, could provide assurance of the credibility of reported savings.

DOD has not met its own goal for savings

While DOD increased its reported savings in fiscal year 1982, it is far short of its goal for the contractor program. In December 1979, DOD established an annual goal for VECP savings of seven-tenths of one percent of each service's total procurement obligational authority. Defense has never achieved this goal, though service procurement budgets have risen substantially during the last 2 years. In 1982, DOD's VECP savings were $304 million short of its goal of $448.7 million.

The Army and Air Force achieved savings equivalent to four-tenths and two-tenths of one percent of their respective total procurement obligational authorities in 1982. These achievements were below the DOD goal and below levels achieved in the late 1970s. (See chart, p. 15.) Army attributed its better previous performance to greater management attention to and support for the value engineering program for contractors. DOD statistics also indicate that more full-time staff were assigned to the Army and Air Force programs during the 1970s.

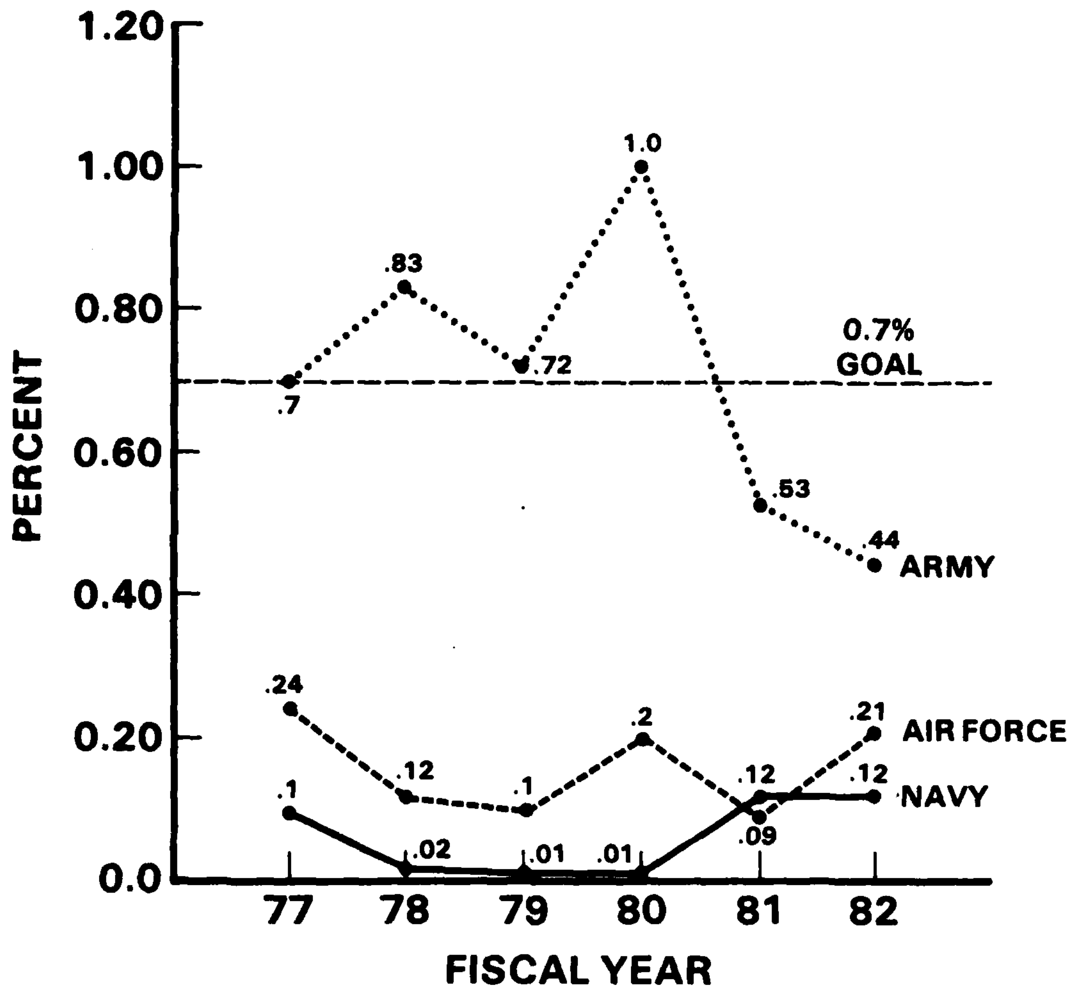
The Navy contributed disproportionately to DOD's fiscal year 1982 savings shortfall. This service achieved only one-tenth of one percent of its total procurement obligational authority and accounts for almost half of the total DOD savings shortfall. The Navy reported VECP savings of only $31.6 million--$146 million below its goal.

In commenting on why DOD did not achieve its overall savings goal, DOD gave a partial explanation. DOD said changes in reported savings may lag behind changes in procurement budgets because a significant portion of funds authorized are not expended in the year authorized. Therefore, reported savings would not necessarily increase as quickly as procurement budgets.

Most major weapons systems have not reported VECP savings

In 1977, we reported that most DOD major weapon systems did not have active value engineering programs; this largely untapped

VECP SAVINGS AS A PERCENT OF TOTAL PROCUREMENT OBLIGATIONAL AUTHORITY (GOAL IS .7 PERCENT)



potential for value engineeering savings still exists today. At the time of our review, most major weapon systems[2] still lacked active value engineering programs. The Navy had more major weapon systems without value engineering activity than the other two military services.

In 1982, only 18 of 46 major weapon systems reported savings under the contractor component of DOD's value engineering program. In fiscal year 1982, value engineering activity by contractors for the 46 major weapon systems was as follows:

--For 13 Army systems, VECP savings of about $31 million were reported under 6 systems.

--For 14 Air Force systems, VECP savings of about $19 million were reported under 6 systems.

--For 19 Navy systems, VECP savings of about $11 million were reported under 6 systems (however, almost all of that amount was under only 1 of the 6 systems).

In response to our draft report, DOD said the area of VECP savings reported for major weapon systems will receive increased emphasis.

---

[2]Reference is to major weapon systems covered under the selected Acquisition Reporting System. In 1982, they were defined by DOD in part as those acquisitions with estimated research and development costs in excess of $75 million or estimated production costs exceeding $300 million. The 46 major DOD weapon programs were included in fiscal year 1982 Selected Acquisition Reports.

CHAPTER 3

GREATER SAVINGS FROM CONTRACTOR VALUE ENGINEERING

WILL REQUIRE FURTHER MANAGEMENT ACTION

To achieve its own goal for VECP savings and to generate savings under more major weapon system acquisitions, DOD will need to place even greater management emphasis on the value engineering program than it already has. High level DOD, Army, and Air Force officials have recognized the potential for greater savings under the contractor component of the program. Our discussions with representatives of selected defense contractors and industry associations supported that view. From these discussions and our own assessment, we identified four broad areas of concern where improved DOD management should lead to greater VECP savings.

The four broad areas of concern are

--lack of continuous top level DOD management visibility and support,

--inadequate incentives for DOD program and procurement personnel to strongly encourage contractor VECP activity,

--lack of contractor awareness and confidence that VECPs will be favorably received by DOD, and

--management weaknesses in the Navy program.

DOD NEEDS A BETTER MECHANISM FOR ENSURING CONTINUOUS HIGH LEVEL VISIBILITY AND SUPPORT

Aside from preparing a semiannual DOD-wide savings report, the contractor component of the DOD value engineering program is not systematically monitored at a high level in DOD. Such monitoring would ensure that the component receives adequate management attention at all appropriate levels. We recognize that a value engineering committee exists and is meeting more often than in previous years. (See p. 6.) However, it is primarily an advisory body and can only recommend improvements. We believe continuous top level management attention will be required to achieve greater VECP savings. We identified two existing mechanisms that could be used to give VECP high level visibility within DOD without incurring large costs:

--The Procurement Management Reporting System.

--The Defense System Acquisition Review Council.

DOD uses its Procurement Management Reporting System to produce periodic reports on DOD procurements. The reports are distributed to a wide range of parties, including high level DOD officials and members of the Congress. Between 1966 and 1974, these

reports included limited information on value engineering clauses in defense contracts. In 1974, however, value engineering information was deleted from the system. Depending on the relative importance of other information requirements, DOD could reinstitute the practice of including value engineering information in these procurement reports.

The Defense System Acquisition Review Council (DSARC) is an advisory body which provides supporting information and recommendations to the Secretary of Defense on the development and acquisition of DOD's major weapon systems. DSARC has been assigned responsibility for reviewing cost effectiveness analyses at some key decision points. The DSARC process is a top level mechanism that could be used to more explicitly monitor VECP activity on major weapon systems.

These are not the only two possible avenues for high level DOD monitoring of the contractor component of the value engineering program. High level DOD officials need sufficient information to recognize and act on areas of management need. In responding to our draft report, DOD agreed that there should be a mechanism to ensure high level visibility. However, DOD said other methods, such as putting additional emphasis on value engineering during regular milestone reviews and special program reviews, would be more effective than using the two systems we suggested.

Some DOD personnel believe responsibility for value engineering is also at too low a level in many DOD field organizations. Many field DOD personnel who are responsible for value engineering oversight perform such duties on a part-time basis and are concerned that they "lack clout" with procurement and program personnel. While organizational alignment of value engineering personnel could be a problem in some instances, we believe a clear and visible endorsement of the merits of the program from the highest level of each organization would overcome most of these concerns.

DOD PERSONNEL NEED STRONGER INCENTIVES TO ENCOURAGE CONTRACTORS TO SUBMIT VECPs

An area of concern expressed within DOD as well as at defense contractors is that DOD personnel are not sufficiently motivated to encourage and favorably act upon VECPs received from contractors. The concern is that DOD procurement and program personnel sometimes attach a lower priority to value engineering responsibilities because incentives to handle other pressing job duties are stronger. Value engineering suffers as a result. While DOD did institute a value engineering awards program in 1982, and some weapon system program managers may take value engineering efforts into account during performance appraisals, it is not clear what constitutes a sufficiently strong incentive for DOD personnel.

In our discussions with high level DOD officials and contractor representatives, the lack of incentives for DOD personnel was repeatedly mentioned as a concern. The busy DOD employee whose performance is being judged primarily on many other factors, such

as whether the weapon system will perform and is delivered on time, may view processing VECPs as an interference.

In fiscal 1982, DOD established a new annual awards program for value engineering. The program initially designated four categories of personnel as eligible to receive outstanding value engineering achievement awards in each military service: defense contractor, program manager, field or installation commander, and individual DOD employee. For fiscal year 1983 and beyond, DOD added a fifth category: value engineering professional. The award certificate is not accompanied by cash, which concerns some of the DOD personnel we spoke with. Because this awards program is still new, we could not assess its impact or possible need for improvement. Cash awards for value engineering achievements can be provided, however, through other DOD awards programs.

Some DOD program managers believe the performance appraisal can be used as a motivator. Three Army weapon system program managers we contacted used cost consciousness as a general criterion in employees' performance appraisals; they consider value engineering to be an element of cost consciousness. It is up to the individual DOD organizational units whether performance appraisals take value engineering activity into account. There is no DOD-wide policy.

Not surprisingly, some DOD personnel suggested that linking value engineering responsibilities to career advancement would provide the incentive for DOD personnel to put greater emphasis on VECP activity. Decisions about career advancement must, of course, take into account many factors, including the employee's overall performance as well as the resource needs of the organization.

Without distorting the importance of their many other duties, DOD employees must be sufficiently motivated to first encourage contractors to submit VECPs, and then to process the VECPs expeditiously and fairly. DOD managers must continually review the relative importance of VECP activity in the performance appraisal, award, and career advancement processes. Appropriate recognition of value engineering achievements in these processes should be an integral part of top management support.

DOD NEEDS TO PROVIDE MORE DIRECTION, ENCOURAGEMENT, AND TRAINING TO DEFENSE CONTRACTORS AND THEIR SUBCONTRACTORS

For the contractor component of the value engineering program to be effective, DOD needs to ensure that defense contractors understand the program, and that contractors' concerns about it are heard and considered fairly. Subcontractor activity--a significant area of opportunity for increasing VECP savings--should be particularly encouraged.

From this assessment and our other studies, we have found that major contractor concerns about VECPs include

--risk of disapproval,

--length of processing time,

--lack of receptivity of DOD personnel,

--lack of DOD training for contractor personnel, and

--complexity of the program.

Regarding the risk of disapproval of a VECP, contractors need to understand that only about half of VECPs submitted will be approved. There are many legitimate reasons for disapproving VECPs; one very clear case is when production requirements cease for the item to which the value engineering idea was to apply. DOD should communicate the expectation that all VECPs will not be approved; and when an individual VECP is rejected, the contractor should receive a full explanation of why.

Regarding contractor concerns about processing time, receptivity, and training, we believe DOD can be more directly responsive. With additional management emphasis, DOD could (1) monitor and try to improve VECP processing times, (2) find better ways to motivate DOD personnel to be more receptive to VECPs, and (3) provide training opportunities for contractor personnel. DOD can act on these points without incurring a great deal of added cost because the management needs can be met by improving existing practices, rather than by setting up totally new practices or procedures.

Regarding the complexity of the program, actions already taken by DOD and other actions under study by the Value Engineering Committee constitute a realistic response to contractor concerns. Earlier in this report we referred to the recent introduction of a simpler type of payment to contractors. (See p. 7.) The recent revitalization of the Value Engineering Committee could lead to other simplifications in the program. Because the technical and legal requirements of the program must remain intact, we see no need at this time for further DOD actions aimed at simplification.

Subcontractor involvement in the value engineering program appears to warrant further DOD management attention because

--a large percentage of the DOD procurement budget ultimately goes to subcontractors;

--the Defense Acquisition Regulation was revised in 1980 to require appropriate value engineering clauses in any subcontract exceeding $100,000; and

--although subcontractor involvement in value engineering is recognized as an area of opportunity by some DOD officials, no systematic reporting or monitoring of it is being done.

We recognize that in monitoring subcontractor activity, DOD officials must take into account practical and cost considerations

as well as legal constraints regarding the contractor-subcontractor relationship. However, DOD should at least assure itself that subcontracts include the appropriate value engineering clause, and that subcontractors are given an opportunity to understand how the value engineering program is intended to operate. In response to our draft report, DOD said it planned to begin identifying subcontractor-initiated VECPs in fiscal year 1984.

The success of the contractor component of DOD's value engineering program is heavily dependent on whether the contractors understand all the technical aspects of the program and are confident that the VECPs they submit will receive fair and expeditious consideration. DOD managers, therefore, need to be continually alert to any areas of particular concern or lack of awareness on the part of contractors, so they can respond appropriately.

NAVY's MANAGEMENT OF VALUE ENGINEERING NEEDS TO BE STRENGTHENED

Our assessment as well as the views of selected defense contractors indicated that the Navy's weak management of value engineering is an area DOD needs to address. As discussed in chapter 2, of the three military services the Navy has done the least to improve the contractor component of the value engineering program and has generally achieved the lowest level of results.

One rationale informally offered by some Navy officials for the Navy's poor performance record is that other techniques to manage and control cost in the Navy are more effective than value engineering. We recognize that many useful and effective cost management techniques other than value engineering are available, and we believe that the other techniques should be used when appropriate in all three military services as part of a comprehensive program to control acquisition cost. However, value engineering is unique as the only cost reduction technique outside the scope of the contract. And in all three military services examples can be found of significant acquisition cost reductions when contractors submitted successful VECPs. We therefore cannot accept the premise that the Navy has less need for value engineering nor can we accept the rationale that the Navy should have a poorer performance record than the other two services.

We believe the Navy's poor performance in this area can be directly linked to its lack of management emphasis on value engineering. In our view, the Navy can strengthen its approach to value engineering by assigning appropriate resources, improving value engineering guidance, providing additional training to its personnel, communicating a receptivity to VECPs through conferences and correspondence, and establishing VECP savings goals. Subsequent to our review, the Navy approved a plan to strengthen its program beginning in fiscal year 1984.

CONCLUSIONS

In the past 3 years the Department of Defense, the Army, and the Air Force have placed additional management emphasis on the value engineering program as it relates to contracts for military acquisitions. The reported savings by the Army and the Air Force under that portion of the program have increased, most likely due to the increased management emphasis. The Navy has given less management attention to value engineering in its acquisitions, with some Navy officials contending that other management techniques will ensure reasonable acquisition cost. Despite the progress recently achieved by the Army and Air Force, the total savings reported for value engineering under DOD contracts for fiscal year 1982 fell $300 million below DOD's own goal.

Value engineering has been a formal discipline in the Department of Defense acquisition process for 20 years. During this time, we have made several studies of DOD's use of the value engineering technique and have urged DOD to maintain an aggressive value engineering program. A great deal of cost has been saved; yet, top management support for value engineering in DOD has fluctuated. At the middle and lower levels of management, DOD personnel who either "make or break" the program are able to greatly deemphasize value engineering without risk of penalty--sometimes by citing other more pressing job duties.

In today's environment of continuing debate and dialog over the magnitude of the defense budget and the portion of it that goes to contractors, the search for ways to reduce the budget continues. In this search, value engineering should be emphasized as part of an overall approach to improving productivity and reducing contracting costs. While value engineering should not be oversold, over $300 million more could have been saved in 1982 if DOD had achieved its own goal of $448.7 million for the contractor component of the value engineering program. Because DOD's goal is considered too conservative by some value engineering experts, the annual savings opportunity may be even greater. Clearly, that magnitude of cost savings is worth pursuing.

Given the longstanding recognition of the benefits of value engineering, DOD's formalization of the program 20 years ago, and our continual urging of DOD to maintain an effective program, it is surprising to us that the program has continued to periodically suffer from varying degrees of management inattention. We believe the current congressional and public scrutiny of the magnitude of DOD's budget provides an additional impetus for DOD to maintain a vigorous value engineering program as an integral part of the acquisition process.

What, then, is needed so that DOD will maintain a consistently rigorous value engineering program? The parties within DOD and the defense industry who have a stake in value engineering agree on the following major points:

--Value engineering has suffered from a lack of continuous top level support within the Department of Defense and the three military services.

--Perhaps because top level support is lacking, DOD personnel involved in procurement and contracting decisions are not always motivated to actively encourage value engineering activity by defense contractors.

--Some defense contractors lack sufficient awareness or confidence in the value engineering program as it relates to defense contracts.

--The Navy has been perceived by many observers as being disinterested in value engineering change proposals and even as discouraging the contractors from submitting proposals.

In addition, as referred to in chapter 2, most parties agree that the credibility of reports of VECP savings could be enhanced by changing the reporting process.

RECOMMENDATIONS

We recommend that the Secretary of Defense take management action on the contractor component of the value engineering program by:

--Increasing high level visibility and support for the program at the DOD level and within the military services by (1) integrating value engineering information into appropriate management information systems and (2) ensuring that value engineering achievements by DOD personnel are appropriately recognized.

--Encouraging greater defense contractor and subcontractor participation by ensuring their awareness of, and confidence in, the DOD value engineering program through increased use of correspondence, conferences, and training opportunities.

--Requiring the Secretary of the Navy to develop an action plan to improve the contractor component of the Navy value engineering program. The plan should, as a minimum, address the need for VECP savings goals, improved program guidance, more value engineering training, additional full-time value engineering personnel, and other specific actions to improve the receptivity of Navy personnel to VECPs submitted by defense contractors.

In addition, to improve the credibility of reported VECP savings without adding an administrative burden, we recommend that the Secretary of Defense have the existing reporting system revised to require that savings be reported at the time actual contract price reductions are made, rather than on the basis of estimates made when VECPs are approved.

AGENCY COMMENTS

DOD said our report appeared to be a reasonably accurate portrayal of the DOD Value Engineering Proposal program. DOD fully concurred with our second and third recommendations and described corrective actions it plans to take. On the first and fourth recommendations, DOD partially concurred but said it favored alternative ways to implement the recommendations in lieu of the specific approaches we suggested. We agree that the suggested alternatives can achieve the same results. (See pp. 10 and 16.) DOD's response to our draft report is included as appendix III to this report.

PREVIOUS GAO REPORTS ON VALUE ENGINEERING

"Value Engineering has the Potential to Reduce Mass Transit Construction Costs" (RCED-83-84, Dec. 29, 1982)

"Potential Exists to Reduce Construction Costs Through More Effective Promotion of the Value Engineering Incentive Program in the Department of the Interior" (RCED-085636, Dec. 1, 1982)

Letter from the Comptroller General to the Chairman, Senate Committee on the Budget discussing GAO's position on the value engineering technique (B-165767, Feb. 5, 1979)

"Department Of Defense Value Engineering Program Needs Top Management Support" (PSAD-78-5, Nov. 16, 1977)

"Potential of Value Analysis for Reducing Waste Treatment Plant Costs" (RCED-75-367, May 8, 1975)

"Need for Increased use of Value Engineering, a Proven Cost-Savings Technique in Federal Construction" (B-163762, May 6, 1974)

"Value Engineering Program Needs To Be Improved and Reinstated" (B-118779, May 10, 1972)

"Opportunities For Increased Savings By Improving Management Of Value Engineering (Design And Manufacture Simplification) Performed By Contractors" (B-165757, Aug. 25, 1969)

VALUE ENGINEERING, AT ITS BEST, IS STILL ONLY ONE TECHNIQUE FOR PRODUCTIVITY IMPROVEMENT AND COST REDUCTION

Over the years, we have supported a strong value engineering program as one important technique for productivity improvement and cost reduction in the Department of Defense and at defense contractors. Our current study seeks to determine whether the value engineering program can be strengthened. While we continue to strongly support value engineering, we also recognize that it is only one of many useful techniques for improving productivity and cutting costs at defense contractors. We have a continuing interest not only in the effectiveness of such individual techniques as value engineering, but also in whether the various techniques and programs collectively form a comprehensive and effective overall approach.

MANY FACTORS AFFECT THE PRODUCTIVITY OF DEFENSE CONTRACTORS AND THE HIGH COST OF WEAPON SYSTEMS

Concern has been repeatedly expressed by members of the Congress and the general public about the high cost of major weapon systems being procured by the Department of Defense. An earlier GAO report[1] discussed many factors that impede productivity at defense contractors and drive up costs. We concluded that the military's desire for maximum-performance, high-technology weapon systems together with congressional funding instability and constraints were the major factors. Other factors, such as contracting formats, paperwork, and the absence of competition, tended to compound the problems.

We also commented in our earlier report that the lack of competition and DOD's profit policies were not providing incentive for capital investment in more efficient equipment. These factors work against productivity improvements, which could have a measurable effect on costs.

From our reviews of major weapon systems, and from congressional testimony since our 1979 report, we can generalize that the many complex and interrelated problems that impede productivity and drive up weapon system costs have not been fully resolved.

DOD USES VARIOUS APPROACHES AND TECHNIQUES TO IMPROVE PRODUCTIVITY AND REDUCE COST

DOD has taken various actions to increase the productivity of its contractors and to restrain the costs of procuring major weapon

---

[1]"Impediments To Reducing The Cost Of Weapon Systems" (PASD-80-6, Nov. 8, 1979)

systems. For example, two major techniques were the "design-to-cost" concept and "should-cost" reviews. In 1981, DOD announced a major program to modify its acquisition philosophy and process and thus enhance military readiness and reduce weapons cost. We have a continuing interest in both longstanding and more recent DOD techniques and programs for reducing costs.

DOD introduced the design-to-cost concept in 1971 when it concluded that, in view of budget limitations and the rising cost of weapons, realistic weapon design should consider what the user could reasonably afford to pay. Under this concept, cost parameters are established and development is continuously evaluated against those parameters. We found in an earlier review, and reported to the Secretary of Defense in March 1978, that the concept was not followed rigorously enough in five systems we had studied. Nevertheless, we believe the design-to-cost concept, when appropriately followed, can reduce the acquisition cost of weapon systems.

The first should-cost review was performed by the Navy in 1967, at the direction of the Secretary of Defense, because the contractor's cost for producing the TF-30 jet engine appeared unreasonably high. Should-cost reviews initially were in-depth evaluations of the efficiency of all phases of defense contractors' operations.

Our past analyses of should-cost reviews indicate that the approach is highly dependent on the time, talent, and attitudes of the review team members. We are not convinced that should-cost reviews will always cause changes in manufacturing methods, processes, equipment, and facilities and substantially improve productivity. We do believe, however, that should-cost reviews can be worthwhile and effective in strengthening the Government's negotiating position in weapons acquisition.

Other DOD actions to increase contractor productivity and restrain acquisition cost have included

--financing independent research and development by contractors to advance the technologies they use;

--providing protection against contract termination to stimulate contractors to invest in more efficient equipment; and

--encouraging contractors to develop and use work measurement systems, which can lead to higher labor efficiency.

In 1981, DOD announced a major acquisition improvement program with 32 initiatives, based on such management goals as better planning, more effective competition, more realistic cost estimates, adequate and stable funding, more economic production rates, greater use of multiyear contracting, and improved readiness and support. Some of these initiatives were new, but many reemphasized past approaches and techniques. DOD believes that before it can

apply these management improvements it needs more near-term funding to make the overall program less costly. We are monitoring the overall progress of this program.

\- - - - -

We recognize that value engineering cannot and should not replace other useful techniques. However, it is unique in that it provides the only incentive specifically designed for cost reduction contract changes which are, by definition, outside the scope of the original contract. As such, value engineering should be a key element in DOD's overall approach to improving productivity and reducing acquisition costs.

THE UNDER SECRETARY OF DEFENSE

WASHINGTON D C 20301

18 AUG 1983

RESEARCH AND
ENGINEERING

Mr. W. D. Campbell
Acting Director, Accounting &
Financial Management Division
U.S General Accounting Office
Room 6001, 441 G Street, NW
Washington, D.C. 20548

Dear Mr. Campbell:

This is the Department of Defense (DoD) reply to your letter to the Secretary of Defense regarding your draft report dated June 20, 1983, on "Value Engineering Should Be Improved As Part Of The Defense Department's Approach To Reducing Acquisition Cost" (GAO Code No. 910354: OSD Case No. 6285). Specific DoD comments are enclosed.

Overall the draft report appears to be a reasonably accurate portrayal of the DoD Value Engineering Change Proposal (VECP) program. The DoD appreciates that the GAO draft report acknowledges the DoD initiatives already underway to strengthen the DoD VECP program. The DoD concurs in the findings, conclusions, and two of the four recommendations. The DoD believes its alternatives for implementing the other two recommendations are more effective.

First, the current procedure of reporting VECP results semiannually provides more useful management information than the GAO suggestion to again report VE contract data in the Individual Procurement Action Report. The DoD agrees that it needs to provide added direction, incentives, and training. Implementation of these objectives will begin with a new DoD VE directive now being prepared for coordination and publication.

Second, the DoD suggests alternatives to the GAO recommendation to change to a procedure to report VECP savings at the time the savings amounts are negotiated with the contractor. The Army is currently experimenting with a procedure to identify the reapplication of VECP savings. The Navy VE plan proposes to review all approved VECPs over $20,000. These alternatives would achieve greater accuracy and credibility in a more effective manner.

Also, it should be noted that the Navy has begun to take positive actions to correct the deficiencies reported by GAO. The Navy FY84 VE Program Plan, currently being implemented, addresses all elements of the GAO recommendation.

The DoD appreciates the opportunity to comment on this draft report and expects the result of this review will be an improved DoD VECP program.

Sincerely,

James P. Wade, Jr.
Acting

Enclosure

ENCLOSURE

General Accounting Office (GAO) Draft Report, "Value Engineering Should Be Improved As Part Of The Defense Department's Approach To Reducing Acquisition Costs," date June 20, 1983, GAO Code No. 910354: OSD Case No. 6285.

FINDINGS

GAO Note: Material on findings A thru H, J, and K deleted because it was essentially a reiteration of GAO's position, with which DOD concurred.

o **FINDING I: Navy Had Placed Less Management Emphasis On the VE Program Than Army and Air Force.** GAO found that under VE policy guidance from the Secretary of the Navy, the Chief of Naval Material (NAVMAT) plays the key role in managing the program for contractors, and is responsible for establishing program objectives, ensuring adequate review of change proposals, evaluating results, reporting savings, and requiring VE training for Navy personnel. GAO found, however, that (1) NAVMAT had never issued program guidance, (2) that the official serving as focal point reportedly spent less than 10 percent of his time on VE, and (3) that Navy management had not acted to improve the contractor component of the VE Program to the same extent that the Army and Air Force had. Specifically, GAO found that contrary to the Army and Air Force, the Navy had not: (1) assigned a high level official full-time to monitor the overall Navy program; (2) developed top level plans to improve its VE program; (3) prepared (at any level) the type and amount of correspondence needed to encourage contractors to submit VECPs; (4) held any recent conferences to encourage greater activity in the contractor component of the program; or (5) established numeric or dollar goals at (major) command or field activity levels. GAO further found that the lack of a strong top management commitment had apparently led to the view among Navy personnel and contractors that VE was not considered a worthwhile program, and several contractors, weapon system personnel, and Navy officials informally told GAO they did not pursue VE efforts more vigorously because of other, higher priority duties. (pp. 10 and 11, GAO Draft Report)

DoD Response:
DoD concurs. At the time of the audit these statements were basically correct. With the recent relocation of the VE OPR within the Navy, VE activities are increasing and a comprehensive Navy VE plan dated June 14, 1983 is being implemented. (Attachment 1 is the Navy plan.)

- FINDING L: What Do Reported Savings Represent? GAO found that VECP savings reported were estimates of net savings (in the report year and certain future periods) that can occur (1) on the contract under which it was submitted; (2) on other benefiting DoD contracts; and (3) in internal DoD operations, and that while savings may partly relate to the future, they are not necessarily all-inclusive because procurement may continue beyond the period (or in greater quantity) than estimated. GAO further found, however, that DoD does not systematically follow through by comparing estimated savings with contract price reductions later negotiated or improvements in internal operations actually made. Concerning the latter, the top DoD VE official suggested to GAO that the administrative cost of routinely verifying such savings might be cost prohibitive, and GAO recognized the difficulty in isolating VECP impact from other (non-VECP) changes that may occur in internal DoD operations. Accordingly, GAO did not necessarily advocate that this process be routinely performed (noting that periodic spot checks made by DoD provide an indication of reliability), but observed that in using and disseminating reported VECP savings--particularly outside of DoD--DoD had a responsibility to clearly define what reported savings represent. GAO also found that if the alternative approach of not reporting savings until price reductions are negotiated into contracts, then reported savings would be precise and there would be no need to be concerned with how actual price reductions compare to earlier estimates. (p. 15 GAO Draft Report)

  DoD Response:
  DoD partially concurs. The DoD believes that the increased administrative burden which would be imposed by reporting VECP benefits as they are contractually negotiated, rather than as the VECP is approved, would not yield any significant improvement in accuracy or credibility. The DoD suggests other alternatives. For example, the Army is currently experimenting with a procedure to identify the reapplication of VECP savings benefits. To assure accuracy and credibility in its program, the Navy VE plan for FY84 (attachment 1) proposes a review at a higher level of each approved VECP in excess of $20,000.

- FINDING M: DoD Has Not Met Its Savings Goal. GAO found that while (VECP) savings reported for FY 1982 (almost $145 million) had increased and procurement budgets had substantially increased in the last 2 years, DoD had never achieved its (savings) goal ($448.7 million for FY 1982) and was $304 million short of its goal for FY 1982. GAO also found that while Army and Air Force achievements in FY 1982 were significant: (1) they were below the DoD goal in levels achieved in the late 1970s (see graphic on p. 17); (2) that the Army attributed prior better performance to greater management attention and support; and (3) that DoD statistics indicated that more full-time staff was assigned to the Army and Air Force (VECP) programs during the 1970s.

GAO further found the Navy contribution for FY 1982 (only one-tenth of one percent) was disproportionate, with savings of only $31.6 million resulting in a shortfall of $146 million, or almost half of the total DoD shortfall. (pp. 15 and 16, GAO Draft Report)

DoD Response:
DoD partially concurs. A significant portion of the funds authorized are not expended in the year authorized. Consequently, changes in reported savings are expected to lag changes in procurement budgets. This lag may explain, in part, the failure of reported savings benefits to increase as quickly as procurement budgets and may be partly responsible for the appearance of poorer performance in comparison to achievements during the late 1970s.

o FINDING N: VECP Savings Not Reported For Most Major Weapon Systems. GAO found--as previously reported in 1977 (OSD Case No. 4639)--that: DoD did not have active VE programs for most major weapon systems and still does not. (Major weapon systems refers to those included in the Selected Acquisition Reporting System. In FY 1982, they were defined by DoD, in part as acquisitions which have estimated research and development costs in excess of $75 million or estimated production costs exceeding $300 million. There were Selected Acquisition Reports for 46 major DoD weapons programs FY 1982). This largely untapped potential for VE savings still exists. The Navy had more major weapon systems without VE activity than the Army or Air Force. The GAO found that in FY 1982, VECP savings were reported for only 18 of 46 major weapon systems and that VE activity by contractors for the 46 major weapon systems was: (1) of 13 Army systems, VECP savings of about $31 million were reported for 6 systems; (2) of 14 Air Force systems, VECP savings of about $19 million were reported for 6 systems; and (3) of 19 Navy systems, VECP savings of about $11 million were reported for 6 systems (however, almost all of that amount was under only one of the six systems). (pp. 16 and 17, GAO Draft Report)

DoD Response:
DoD concurs. This area is one which will receive increased emphasis.

o FINDING O: DoD Does Not Have a Mechanism to Assure Continuous High Level Visibility and Support of the Contractor Component of Its VE Program. In identifying broad areas where improved DoD management should lead to greater VECP savings, GAO found one was a lack of continuous top level DoD management visibility and support, and that aside from preparing a semiannual DoD-wide savings report, the contractor component is not systematically monitored at a high level to provide assurance that it received adequate management attention at all levels. Recognizing that a VE committee exists and meets more often than in previous years, GAO found, however, that it is primarily an advisory body and can only

recommend improvements. (GAO expressed the belief that to achieve greater VECP savings, continuous top level management attention will be required.) GAO identified two existing mechanisms that could be used (without incurring large costs) to provide high level visibility within DoD: (1) Incorporating VE information into the DoD-wide procurement information system; and (2) Directing the Defense System Acquisition Review Council (DSARC) to monitor VECP activity at key milestones of system procurement. GAO found that DoD uses its Procurement Management Reporting System (PMRS) to produce periodic reports on DoD procurements; that the reports are distributed to a wide range of parties (including high level DoD officials and members of the Congress), that between 1966 and 1974, the reports included limited information on VE clauses in contracts; but that in 1974, the VE information was deleted. GAO suggests that depending on relative importance, DoD could again include VE information in these procurement reports. GAO also found that DSARC is a top level advisory body to the Secretary of Defense, that DSARC provides supporting information and recommendations to the Secretary at key decision points in the development and acquisition of DoD's major weapon systems, that DSARC has been assigned responsibility for reviewing cost effectiveness analyses at key decision points, and that consequently, GAO believes the DSARC process represents an available mechanism that could be used to more explicitly monitor VECP activity on major weapon systems. Adding that these two are not the only avenues, GAO notes that visibility is also facilitated when sufficient information on VECP activity is provided to allow high level DoD officials to recognize and act on areas of management need. (pp. 18-19, GAO Draft Report)

DoD Response:
DoD partially concurs. DoD agrees that there should be a "mechanism to assure high level visibility and support to the contractor components of its VE program." Alternatives to the GAO finding are already in place. For example, the results of the contractor VECP program and an analysis of the data are furnished by DUSDRE to the Office of the Secretary of each military department and to the Director of each concerned Defense Agency. The previous strategy of including in the Individual Procurement Action Report (DD Form 350, copy attached (attachment 2)) data on the type of VE clause included in each contractual action serves no purpose. The Defense Acquisition Regulation (DAR) now requires all contracts over $100,000 to contain VECP clauses with only very limited exceptions. Current reports provide adequate visibility and motivation. The resurgence in the contractor component of the USAF VE program can be traced directly to USAF reemphasis undertaken as a result of one such analysis of the USAF program versus that of other DoD components.

Also, the DSARC process may not be an effective vehicle for encouraging contractor VECP activities. Much of the reported VECP activity takes place during the production phase which is after program oversight activity had been delegated to the Military Departments. DoD does agree, however, that the results of VE activities as well as other activities to restrain or reverse current trends in weapon system cost growth should be further emphasized during program milestone reviews and during other special program reviews. Recent procedural changes now include reviewing the results of purposeful activities, such as VE, undertaken to offset projected cost increases.

Other initiatives such as the DoD Honorary Awards program provide an opportunity for high level visibility and review.

- FINDING P. Some DoD Personnel Believe VE Responsibility Is At Too Low A Level. GAO found that in addition to the lack of a monitoring mechanism, some DoD personnel believed that VE responsibility was at too low a level in many organizations and that many personnel with VE oversight responsibilites performed them part-time and were concerned that they "lack clout" with procurement and program personnel. Recognizing that while organizational alignment of VE personnel could sometimes be a problem, GAO expressed the belief that a clear and visible endorsement of the merits of the program--from the highest level of each organization--should overcome most of these concerns. (p. 19, GAO Draft Report)

  DoD Response:
  DoD concurs. The Navy and Air Force, however, are continuing to realign VE management resources and to make available a limited number of full-time personnel spaces.

- FINDING Q: DoD Personnel Need Stronger Incentives to Encourage Contractors to Submit VECPs. The second broad area needing management improvement identified by GAO--expressed within DoD and by contractors --was that there were inadequate incentives for DoD personnel to strongly encourage contractor VECP activity. GAO found that VE suffers because DoD personnel are not sufficiently motivated to encourage and favorably act on contractor VECPs due to other, stronger-pressing job duties. While recognizing that DoD instituted a VE awards program in FY 1982, and that some weapon system program managers may take VE efforts into account during performance appraisals, GAO found that the issue of what constitutes sufficiently strong incentives for DoD personnel remains open. GAO also found that documenting a lack of incentives was difficult because DoD personnel were not likely to be candid. But in discussions with both DoD and contractor representatives, the lack of incentives was repeatedly expressed as a concern. GAO observed that the busy DoD employee being primarily judged on other operational factors may view processing VECPs as an interference. GAO found that the new

annual awards program --for each Service--included four categories for outstanding VE achievement: (1) contractor; (2) DoD program manager; (3) field command or installation; and (4) individual DoD employee, but noted the award certificate is not accompanied by cash--a fact of concern to a few DoD personnel. GAO further found that since the awards program was still new, assessment was premature and noted that cash awards can be provided through other programs. Concerning using the performance appraisal as a motivator, GAO found that three Army weapon system program managers contacted considered VE an element of cost consciousness, and used this element as a general criterion in performance appraisals. GAO further found, however, that this was not the result of a DoD-wide policy, and that it was up to the individual units whether VE activity was taken into account in performance appraisal criteria. Although GAO found that some DoD VE personnel suggested that better career advancement opportunities would provide incentives for greater emphasis on VECP activity, it did observe that career advancement decisions must also consider many factors including employee overall performance as well as the overall resource needs of the organization. (pp. 18, 20, and 21, GAO Draft Report)

DoD Response:
DoD concurs. For FY83 and beyond, a fifth category has been added to the VE Honorary Awards program--that of VE professional. Existing procedures, if utilized properly, provide adequate recognition for exemplary procedures in accordance with DoD Directive 5120.15, "DoD Incentive Awards Program; Assignment of Responsibility (MRA&L)," DoD Instruction 5120.16, "Department of Defense Incentive Awards Program Policies and Standards," and DoD Instruction 3201.2, "DoD Science and Engineering Incentives and Awards Programs (USDRE)." The latter Instruction specifically includes VE. The current DoD top management emphasis on VE is expected to enlarge the role of VE accomplishments in selecting winning candidates in accordance with DoD merit promotion procedures and to provide a stimulus to use existing procedures for cash awards for outstanding contributions.

o FINDING R: DoD Needs To Provide More Direction, Encouragement, and Training to Contractors and Their Subcontractors. The third broad area needing management improvement identified by GAO was lack of contractor awareness and confidence that VECPs will be favorably received by DoD. GAO found that for the contractor component to be effective, DoD needs to assure that contractors understand the program and that concerns or fears are heard and considered fairly. GAO further found that encouragement of subcontractor activity was a potentially significant area of opportunity for increasing VECP savings and therefore should be a particular area of DoD emphasis. Based on its assessment and other studies, GAO found that major contractor concerns about VECPs included: (1) risk of disapproval; (2) lengthy processing time; (3) lack of receptivity of DoD personnel;

(4) lack of DoD training for contractor personnel; and (5) complexity of the program. These concerns all need to be considered and addressed. Concerning the risk of disapproval, GAO found that contractors need to understand it is unreasonable to anticipate that all VECPs will be approved (DoD expects about 50 percent) and that there were many legitimate reasons for disapproving VECPs (such as termination of requirements). GAO suggests that DoD should communicate the fact that all VECPs cannot be expected to be approved--through conferences and other ways--and that contractors should be provided a clear explanation of why a VECP was rejected. Regarding concerns about processing time, receptivity, and training, GAO found DoD can be more directly responsive. With additional management emphasis, DoD could: (1) monitor and try to improve VECP processing times, (2) find better ways to motivate DoD personnel to be more receptive to VECPs, and (3) provide training opportunities for contractor personnel. GAO also found that DoD could take management actions on these points without incurring a great deal of added cost because the management needs could be met by improving existing practices rather than setting up totally new practices or procedures. Concerning complexity, GAO found that actions already taken by DoD and under study by the VE Committee constituted a realistic response to contractor concerns. Referring to the recent introduction of a simpler type of payment to contractors (Findings E and F), GAO found that the recent revitalization of the VE Committee could also lead to other program simplifications, but that because technical and legal program requirements must remain intact, there was no need at this time for further DoD actions aimed explicitly at simplification. (pp. 21-23, GAO Draft Report)

DoD Response:
DoD concurs. Many of these activities are already under way. For example, contractor personnel are invited to attend DoD VE training courses. Current procedures require a clear explanation of the reason(s) for rejecting a VECP. The receptivity to VECPs is a problem the DoD is seeking to solve through a variety of approaches including briefings, letters, reports, and joint meetings and conferences with industry associations.

o FINDING S: Subcontractor Involvement in VE Warrants Further Management Attention. GAO found that subcontractor involvement in the VE program appeared to be an area warranting further DoD management attention because: (1) a large percentage of the DoD procurement budget ultimately goes to subcontractors; (2) the DAR was revised in 1980 to require appropriate VE clauses in any subcontract exceeding $100,000; and (3) although subcontractor involvement in VE is recognized as an area of opportunity by some DoD officials, no systematic reporting or monitoring is made of subcontractors' VECP activity. Recognizing that in monitoring subcontractor activity,

DoD officials must take into account practical and cost considerations as well as legal constraints regarding the contractor-subcontractor relationship, GAO found that as a minimum, DoD should assure itself that subcontracts include the appropriate VE clause, and that subcontractors are given the opportunity to understand how the VE program is intended to operate. (p. 22-23, GAO Draft Report)

DoD Response:
DoD concurs. The proposed revision to DoD Directive 5010.8 will be revised to suggest that subcontractor-initiated VECPs be identified. It is expected these changes will become effective during FY 1984.

- FINDING T: Navy Management of VE Needs Strengthening. Commenting on the fourth broad area of needed improvement--Navy management--GAO found that its assessment (as well as the views of selected contractors) indicated that weak Navy management of VE needed to be addressed. Noting that the Navy had done less than Army and Air Force to improve the contractor component of the VE program, GAO points out that Navy had also generally achieved the lowest level of results. GAO found that one rationale informally offered by some Navy officials for the Navy's poor performance record was the belief that other techniques to manage and control cost in the Navy are more effective than VE. While recognizing that many other useful and effective cost management techniques are available and should be used when appropriate (as part of a comprehensive program to control acquisition cost), GAO further found, however, that VE was unique as the only cost reduction technique outside the scope of the contract, and for Army, Navy and Air Force, examples could be found of significant acquisition cost reductions when contractors submitted successful VECPs. Accordingly, GAO did not accept the premise that the Navy had less need for VE and did not accept the rationale that the Navy should have a poorer performance record than the other two Services. (p. 23, GAO Draft Report)

  DoD Response:
  DoD concurs. Although the Navy had the first VE program in the DoD, the recent Navy program has been the weakest. The Navy is now initiating several actions to strengthen its program beginning in FY 1984. The Navy is moving to establish full-time value engineering program administrators at the Systems Command level. The Navy program plan was officially approved on June 14, 1983. Attachment 1 is a copy of the plan.

CONCLUSIONS

- Conclusion 1. GAO concluded that the Navy had been less responsive to DoD improvement incentives, had emphasized the

program less than Army and Air Force, and that in general, the VE program for contractors suffered from a lack of top management support and commitment to improvement. While recognizing that limited improvement efforts were underway (new program guidance and a FY 1983 program plan being drafted), GAO noted that Navy had done far less than Army and Air Force and that some Navy officials evidently did not consider VE a worthwhile management tool, and stated that without greater Navy top level support for the VE concept, significant improvement is not likely. (pp. 10 and 11, GAO Draft Report)

<u>DoD Response</u>:
DoD concurs. The revised Navy program addresses this problem. Attachment 1 is a copy of the Navy VE plan.

- <u>Conclusion 2</u>. GAO concluded that: (1) DoD employees must first be sufficiently motivated to encourage contractors to submit VECPs, and then to process the VECPs expeditiously and fairly; (2) DoD managers must continually review the degree of importance that VECP activity should have in the performance appraisal, award, and career advancement processes; and (3) appropriate recognition of VE achievements in these processes should be an integral part of top management support in DoD for a strong VE program. (p. 21, GAO Draft Report)

<u>DoD Response</u>:
DoD concurs.

- <u>Conclusion 3</u>. GAO concluded that the success of the contractor component of DoD's VE program is heavily dependent on whether the contractors understand all the technical aspects of the program and are confident that the VECPs they submit will receive fair and expeditious consideration, and that DoD managers, therefore, need to be continually alert to any areas of particular concern or lack of awareness on the part of contractors, so that DoD management can respond appropriately. (p. 23, GAO Draft Report)

<u>DoD Response</u>:
DoD concurs. Government receptivity is as important as contractor participation.

- <u>Conclusion 4</u>. GAO concluded that the Navy's poor performance under the contractor component of the VE program could be directly linked to the lack of management emphasis the Navy places on VE and that the Navy could strengthen its approach to VE by assigning appropriate resources, improving guidance, providing additional training to its personnel, communicating a receptivity to VECPs through conferences and correspondence, and establishing VECP savings goals. (p. 23, GAO Draft Report)

<u>DoD Response</u>:
DoD concurs. The Navy has revised its VE program to address these weaknesses (see Navy plan, attachment 1).

- <u>Conclusion 5</u>. GAO concluded that: (1) in the past 3 years the DoD, the Army, and the Air Force had placed additional management emphasis on the VE program as it relates to contracts for military acquisitions; (2) reported savings by the Army and the Air Force under that portion of the program had increased (most likely due to the increased managment emphasis); (3) the Navy had given less management attention to VE in its acquisitions (with some Navy officials contending that other management techniques will assure reasonable acquisition cost); and (4) despite the progress recently achieved by the Army and Air Force, the total savings reported for VE under DoD contracts for FY 1982 were $300 million below DoD's own goal. (p. 24, GAO Draft Report)

  <u>DoD Response</u>:
  DoD concurs. Navy management is committed to support current VE initiatives sponsored by the Office of the Secretary of the Navy and the Chief of Naval Material. The DoD also believes that part of the failure to achieve a savings benefit of seven-tenths of a percent of the total obligational authority arises from the lag in spending authorized funds. Often, actual expenditures follow authorization by a considerable span of time. Thus, although savings benefits are rising, they are not rising as fast as the procurement budget.

- <u>Conclusion 6</u>. GAO concluded that (1) VE had been a formal discipline in the DoD acquisition process for 20 years; (2) over the years, GAO made several studies of DoD's use of the VE technique and urged DoD to maintain an aggressive VE program (with a great deal of cost saved), (3) yet, top management support for VE in DoD had fluctuated and, (4) at the middle and lower levels of management, DoD personnel who either "make or break" the program were able to greatly de-emphasize VE without risk of penalty--sometimes by citing other more pressing job duties. (p. 24, GAO Draft Report)

  <u>DoD Response</u>:
  DoD concurs. Current DoD top management, however, fully supports VE and has instituted procedures to ensure continuing emphasis on VE in the future.

- <u>Conclusion 7</u>. GAO concluded that (1) in today's environment of continuing debate and dialogue over the magnitude of the defense budget, and the portion of it that goes to contractors, the search for ways to reduce the budget continues; (2) in this search, VE should be a technique that is emphasized as part of an overall approach to improving productivity and reducing costs at defense contractors; and (3) while VE should not be oversold, over $300 million more could have been saved in FY 1982 if DoD had achieved its goal of $448.7 million for the contractor component of the VE program. GAO also

concluded that because DoD's goal was considered too conservative by some VE experts, the annual savings opportunity might be several hundred million dollars greater, and that clearly, that magnitude of cost savings was worth pursuing. (p. 24, GAO Draft Report)

DoD Response:
DoD partially concurs. DoD believes the seven-tenths of one percent represents an attainable goal. Arguments that the goal should be higher appear premature. Even contractors with successful VE programs are not yet achieving 0.7 percent from their supplier VE programs. The DoD will direct its efforts to achieving its stated goal. Before it enters into discussions about raising the goal, the DoD must come closer to achieving its current goal.

- Conclusion 8. GAO concluded that given the longstanding recognition of the benefits of VE, DoD's formalization of the program 20 years ago, and GAO's continual urging of DoD to maintain an effective program, it was surprising that the program had continued to periodically suffer from varying degrees of management inattention. GAO expressed the belief that the current congressional and public scrutiny of the magnitude of DoD's budget provided an additional impetus for DoD to assure a vigorous VE program as an integral part of the acquisition process. (p. 24, GAO Draft Report)

  DoD Response:
  DoD concurs. The DoD is attempting to ensure continuing top management attention in the future by, for example, including VE accomplishments in procedures for milestone and other weapon system program reviews.

- Conclusion 9. GAO concluded that among the parties within DoD and the Defense industry with a stake in VE, a consensus could be reached on the following major points: (1) VE had suffered from a lack of continuous top level support within the DoD and the Services; (2) perhaps because top level support was lacking, DoD personnel involved in procurement and contracting decisions are not always motivated to actively encourage VE activity by defense contractors; (3) some defense contractors lack sufficient awareness or confidence in the VE program as it relates to defense contracts; and (4) the Navy has been perceived by many observers as being disinterested in VE change proposals and even as discouraging the contractors from submitting proposals. GAO concluded that in addition, most parties agreed that the credibility of VECP savings could be enhanced by changing the process for reporting savings. (pp. 24-25, GAO Draft Report)

  DoD Response:
  DoD concurs. The DoD plans to consider changes to VECP savings benefit reports as described earlier in the DoD response to Finding L.

RECOMMENDATIONS

GAO recommended that the Secretary of Defense take management action on the contractor component of the VE program by:

- O Recommendation 1. Increasing high level visibility and support for the program at the DoD level and within the military services by (1) integrating VE information into appropriate management information systems and (2) assuring that VE achievements by DoD personnel are appropriately recognized.

  DoD Response:
  DoD partially concurs. DoD believes the alternatives described in the DoD response to Finding O are preferable because they are more likely to assure high level visibility.

- O Recommendation 2. Encouraging greater defense contractor and subcontractor participation by assuring their awareness of, and confidence in, the DoD VE program through increased use of correspondence, conferences, and training opportunities.

  DoD Response:
  DoD concurs.

- O Recommendation 3. Requiring the Secretary of the Navy to develop an action plan to improve the contractor component of the Navy VE program. The plan should, as a minimum, address the need for VECP savings goals, improved program guidance, more VE training, additional full-time VE personnel, and other specific actions to improve the receptivity of Navy personnel to VECPs submitted by defense contractors. (p. 25, GAO Draft Report)

  DoD Response:
  DoD concurs. The Navy action plan is included as attachment 1.

- O Recommendation 4. GAO also recommended that to improve the credibility of reporting VECP savings without adding an administrative burden, the Secretary have the existing reporting sytem revised to require that savings be reported at the time actual contract price reductions are made, rather than on the basis of estimates made when VECPs are approved. (p. 26, GAO Draft Report)

  DoD Response:
  DoD partially concurs. The alternatives described in the DoD response to Finding L are believed to be more effective in achieving this GAO objective.

DEPARTMENT OF THE NAVY FY 84 VALUE ENGINEERING PROGRAM PLAN

I. References: (a) DODD 5010.8, DOD Value Engineering Program of 12 May 1976
(b) DODI 7110.2, Budget Guidance for Value Engineering of 3 Apr 1972
(c) DAR, Section I, Part 17, and Defense Acquisition Circular Number 76-26 of 15 Dec 1980
(d) SECNAVINST 4858.2C, Department of Navy Value Engineering Program of 22 Apr 1980

II. Purpose/Objective: The effective use of Value Engineering (VE) within the Department of the Navy (DON) will reduce and assist in controlling costs. VE will identify and document unnecessary functions and requirements that add to cost but not to performance, quality, reliability, maintainability, safety or logistics support.

III. Background: The requirements and direction of references (a), (b) and (c) were implemented by reference (d). Reference (d) states that DON policy is to ensure that the end product of all weapon systems and other equipment be produced as economically as possible. In order to realize this goal all managers and procurement activities in the DON shall stress the use of VE methodology during the program's design and production phases and in its logistics support. All VE applications shall include provisions for a thorough technical review so that necessary functions and requirements are not compromised.

IV. Scope: In-house, value engineering applies throughout the DON. All relevant contracts shall include VE as required in reference (c).

V. Goals: The Department of Defense has established a VE goal of seven-tenths of one percent of the procurement total obligation authority. DON goals as described below. The Chief of Naval Material (CNM) is responsible for the accomplishment of these goals.

a. Establish VE savings goals for the Commander of each Systems Commands who shall establish savings goals for subordinate activities. VE objectives shall be included in program goals and individual merit pay objectives where appropriate. The Commandant of the Marine Corps shall establish similar VE goals and programs for the Marine Corps.

b. Develop a Navy VE package to accompany all contract awards of over one million dollars which will be sent out under a CNM/SYSCOM Commander letter emphasizing the potential pay backs from Value Engineering.

c. Establish SYSCOM VE focal points for both the technical and contractual aspects of VE.

d. Establish annual VE training goals of 15% of all technical personnel and 10% of all contracts personnel.

ATTACHMENT 1

e. Develop and establish a Navy VE incentive awards program to identify and recognize both in-house and contractor VE achievement.

f. Develop and establish SYSCOM VECP processing procedures and oversight reviews to include a realistic processing time for VECPs.

g. Hold quarterly VE working group meetings to review SYSCOM VE program status and progress.

h. Hold an annual upper management review of Navy VE program status to be attended by representatives of ASN, CNO, CMC and CNM.

APPENDIX III

DON FY84 VE POA&M

MAJOR MILESTONES	
APPROVAL OF VE PLAN AND POA&M BY ASN(S&L)	JULY 83
ISSUE NAVMAT VE INSTRUCTION	SEPT 83
ESTABLISH SYSCOM VE SAVINGS GOALS (GOAL V.a.)	SEPT 83
ESTABLISH SYSCOM CONTRACTS AND TECHNICAL VE FOCAL POINTS (GOAL V.c.)	AUG 83
ESTABLISH SYSCOM VE TRAINING GOALS (GOAL V.d.)	AUG 83
DEVELOP AND ESTABLISH FORMAL VECP PROCESSING PROCEDURES (GOAL V.f.)	SEPT 83
DEVELOP AND ESTABLISH ACHIEVEMENT PROGRAM (GOAL V.e.)	SEPT 83
DEVELOP AND ESTABLISH NAVY CONTRACTOR VE PACKAGE (GOAL V.b.)	SEPT 83
HOLD UPPER MANAGEMENT VE "KICK-OFF" MEETING	SEPT 83

(Copy)

INDIVIDUAL PROCUREMENT ACTION REPORT

1A. REPORT NO. *(Current)* | 1B. | 1C. REPORT NO. *(Previous)* | 2. CONTRACT NO. A. Dept. B. Activity C. FY D. Serial No. E. RO *(Army only)*

Item 3 Code — 3. CORRECTION OF PRIOR DD FORM 350 Item(s) ______
1. Corrected entry ______
2. Reversing entry ______

4. MOD. NO. AND OTHER IDENT.

Item 5 Code — 5. PURCHASING OFFICE

Item 5A Code — 5A. SOUTHEAST ASIA *(Actions of $200,000 or more)*
1. In support of SEA 9. Not in support of SEA

Item 6 Code — 6. CONTRACTOR IDENTIFICATION
Company Name:
Division Name *(if any):*
Number and Street:
City and State or Country:

Item 7 Code City State — 7. PRINCIPAL PLACE OF PERFORMANCE *(City and State or Country)* | 7A. | 7B.

Item 7C Code — 7C. MULTI-YEAR PROCUREMENT ASPR 1-322.1(a)
A. *First year* B. Second or subsequent year C. Not a multi-year procurement

Item 8 Code — 8. SUBJECT TO WALSH-HEALEY OR SERVICE CONTRACT ACT
A. Walsh-Healey Act, Manufacturer B. Walsh-Healey Act, Regular Dealer
C. Service Contract Act D. Not subject to Walsh-Healey or Service Contract Act

Item 9 Code — 9. LABOR SURPLUS AREA
1. Labor Surplus Area—No preference
2. *Labor Surplus Area—Set-Aside preference*
3. Labor Surplus Area—Tie bid preference
4. Labor Surplus Area/Concern individually certified by Dept. of Labor
5. Not a Labor Surplus Area
6. Combined Small Business/Labor Surplus Area Set-Aside (See 1—706.7)

10A. FSC OR SV CODE | 10B. SYSTEM OR EQUIPMENT CODE | 10C. DD CLAIMANT PROG. NO. | 11. DESCRIPTION OF COMMODITY OR SERVICE

Item 12 Code — 12. COORDINATED PROCUREMENT
1. Procurement Agreement 2. (Reserved – *Do not use)* 3. GSA Supply Schedule *(Enter Code 1 in item 15)*
4. (Reserved – *Do not use)* 5. Single Department Procurement 6. Defense Supply Agency 7. Outside U.S. 8. Other

Item 13 Code — 13. SYNOPSIS OF PROPOSED PROCUREMENT
A. Synopsized per ASPR 1—1003.9
B. Not Synopsized: Original Estimate under $10,000
Not synopsized per ASPR 1—1003.1 Exception: 1 2 3 4 6 7 8 9

Item 14 Code — 14. KIND OF PROCUREMENT ACTION
1. Initial Letter Contract
2. Definitive Contract superseding Letter Contract
3. Definitive Contract *(Including Notice of Award)*
4. Order under Contract
5. (Reserved – *Do not use)*
Modification:
6. Additional Work 8. Change Order
7. Funding action 9. Termination or cancellation

Item 15 Code — 15. CONTRACT PLACEMENT
1. Intragovernmental *(Do not fill in items 16 thru 21A)*
2. Two-step formal advertising *(Do not fill in items 17 thru 19)*
3. Other formal advertising *(Do not fill in items 17 thru 19)*
4. Small Business restricted advertising *(Fill in all items)*
5. *Other negotiated (Fill in all items)*
J. Foreign Military Sales *(Do not fill in items 16 thru 21A)*

Item 16 Code — 16. SMALL BUSINESS
Awarded to Large Business because Small Business:
A. Not solicited C. Bid was not low
B. Solicited but did not bid D. Bid not accepted for other reasons
J. Awarded to Small Business
K. Awarded to nonprofit institution
L. Awarded for work outside U.S. and possessions

Item 17 Code — 17. *NEGOTIATED UNDER 10 USC 2304(a) EXCEPTION*
For 10 USC 2304(a)(1), ASPR 3—201.2 Citation:
1A. Labor Surplus Area or industry set-aside
1B. Unilateral Small Business set-aside
1C. Disaster Area set-aside
1E. Balance of Payments Program

Negotiation accomplished pursuant to 10 USC 2304(a), Clause No.:

2	7	12	16
4	8	13	
5	9	14	
6	11	15	

Per 10 USC 2304(a)(10), ASPR 3—210.2 Citation:

10—1	10—6	10—11	10—16
10—2	10—7	10—12	10—17
10—3	10—8	10—13	
10—4	10—9	10—14	10—26
10—5	10—10	10—15	

Otherwise authorized by law: 17A. Joint Small Business set-aside PL 85—536 17B. Other *(Specify)* ______

Item 18 Code — 18. EXTENT OF COMPETITION IN NEGOTIATION
Competitive:
1. Price competition
2. Design, technical, or other competition
Non-competitive follow-on action after:
3. Price competition
4. Design, technical, or other competition
5. Other non-competitive

Item 19 Code — 19. CERTIFIED COST OR PRICING DATA *(This action only)* ASPR 3—807.3
A. Required B. Not Required

Item 20 Code — 20. TYPE OF CONTRACT—ASPR SECTION III, PART 4
Fixed Price Redetermination:
A. Type A
B. Type E
C. Other
J. Firm fixed price
K. Fixed price escalation
Fixed Price Incentive:
L. With performance incentive
M. Without performance incentive
R. Cost-plus-award fee
S. Cost contract
T. Cost sharing
U. Cost-plus-fixed fee
Cost-plus-incentive fee:
V. With performance incentive
W. Without performance incentive
Y. Time and materials
Z. Labor hour

Item 21 Code — 21. VALUE ENGINEERING CLAUSE *(ASPR SECTION I, PART 17)*
A. Incentive J. Program Requirement B. No value engineering clause

Item 21A Code — 21A. COST ACCOUNTING STANDARDS CLAUSE ASPR 7—104.83
1. Required 2. Not required

22. DATE OF THIS ACTION *Year / Month / Day* | 23. EST. COMPLETION DATE *(Year and Month)* / | 24. TOTAL OF THIS ACTION *(Round out to nearest whole dollar)* $ | 24A.

25. TYPED NAME AND SIGNATURE OF CONTRACTING OFFICER OR REPRESENTATIVE | 26. TEL. EXTEN. | 27. DATE SUBMITTED

DD FORM 1 Jul 73 350 PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

(910354)

END

FILMED

12-83

DTIC